

1 **(November 17, 1997)**

2 **Geosynthetic Wall Construction Requirements**

3 **Submittals**

4 The Contractor shall submit to the Engineer, a minimum of 14 calendar days  
5 prior to beginning construction of each wall, detailed plans for each wall and  
6 as a minimum, the submittals shall include the following:

- 7
- 8 1. Detailed wall plans showing the actual lengths proposed for the  
9 geosynthetic reinforcing layers and the locations of each  
10 geosynthetic product proposed for use in each of the geosynthetic  
11 reinforcing layers.
  - 12
  - 13 2. The Contractor's proposed wall construction method, including  
14 proposed forming systems, types of equipment to be used and  
15 proposed erection sequence.
  - 16
  - 17 3. Manufacturer's Certificate of Compliance, samples of the retaining  
18 wall geosynthetic and sewn seams for the purpose of acceptance  
19 as specified.
  - 20
  - 21 4. Details of geosynthetic wall corner construction, including details of  
22 the positive connection between the wall sections on both sides of  
23 the corner.
  - 24
  - 25 5. Details of terminating a top layer of retaining wall geosynthetic and  
26 backfill due to a changing retaining wall profile.
  - 27

28 Approval of the Contractor's proposed wall construction details and methods  
29 shall not relieve the Contractor of their responsibility to construct the walls in  
30 accordance with the requirements of these Specifications.

31

32 **Wall Construction**

33 The Contractor shall excavate for the retaining wall in accordance with  
34 Section 2-09, and conforming to the limits and construction stages shown in  
35 the Plans.

36

37 The Contractor shall direct all surface runoff from adjacent areas away from  
38 the retaining wall construction site.

39

40 The Contractor shall begin wall construction at the lowest portion of the  
41 excavation and shall place each layer horizontally as shown in the Plans.  
42 The Contractor shall complete each layer entirely before beginning the next  
43 layer.

44

45 Geotextile splices shall consist of a sewn seam or a minimum 1 ft overlap.  
46 Geogrid splices shall consist of adjacent geogrid strips butted together and  
47 fastened using hog rings, or other methods approved by the Engineer, in  
48 such a manner to prevent the splices from separating during geogrid  
49 installation and backfilling. Splices exposed at the wall face shall prevent  
50 loss of backfill material through the face. The splicing material exposed at  
51 the wall face shall be as durable and strong as the material to which the

1 splices are tied. The Contractor shall offset geosynthetic splices in one layer  
2 from those in the other layers such that the splices shall not line up vertically.  
3 Splices parallel to the wall face will not be allowed, as shown in the Plans.  
4

5 The Contractor shall stretch out the geosynthetic in the direction  
6 perpendicular to the wall face to ensure that no slack or wrinkles exist in the  
7 geosynthetic prior to backfilling.  
8

9 For geogrids, the length of the reinforcement required as shown in the Plans  
10 shall be defined as the distance between the geosynthetic wrapped face and  
11 the last geogrid node at the end of the reinforcement in the wall backfill.  
12

13 The Contractor shall place fill material on the geosynthetic in lifts such that 6  
14 inches minimum of fill material is between the vehicle or equipment tires or  
15 tracks and the geosynthetic at all times. The Contractor shall remove all  
16 particles within the backfill material greater than 3 inches in size. Turning of  
17 vehicles on the first lift above the geosynthetic will not be permitted. The  
18 Contractor shall not end dump fill material directly on the geosynthetic  
19 without the prior approval of the Engineer.  
20

21 Should the geosynthetic be damaged or the splices disturbed, the backfill  
22 around the damaged or displaced area shall be removed and the damaged  
23 strip of geosynthetic replaced by the Contractor at no expense to the  
24 Contracting Agency.  
25

26 The Contractor shall use a temporary form system to prevent sagging of the  
27 geosynthetic facing elements during construction. A typical example of a  
28 temporary form system and sequence of wall construction required when  
29 using this form are detailed in the Plans. Soil piles or the geosynthetic  
30 manufacturer's recommended method, in combination with the forming  
31 system shall be used to hold the geosynthetic in place until the specified  
32 cover material is placed.  
33

34 The Contractor shall place and compact the wall backfill in accordance with  
35 the wall construction sequence detailed in the Plans. The minimum  
36 compacted backfill lift thickness of the first lift above each geosynthetic layer  
37 shall be 6 inches. The maximum compacted lift thickness anywhere within  
38 the wall shall be 10 inches.  
39

40 The Contractor shall compact each layer to 95 percent of maximum density.  
41 The water content of the wall backfill shall not exceed the optimum water  
42 content by more than 3 percent. The Contractor shall not use sheepsfoot  
43 rollers or rollers with protrusions. Rollers which weigh more than 6,000 lbs  
44 shall be used with the vibrator turned off. The Contractor may use rollers  
45 which weigh 6,000 lbs or less with the vibrator turned on with the prior  
46 approval of the Engineer. The Contractor shall compact the zone within 3 ft  
47 of the wall face without causing damage or distortion to the wall facing  
48 elements or reinforcing layers by using light mechanical tampers approved by  
49 the Engineer.  
50

1 The Contractor shall construct wall corners at the locations shown in the  
2 Plans, and in accordance with the wall corner construction sequence and  
3 method submitted by the Contractor and approved by the Engineer. Wall  
4 angle points with an interior angle of less than 150 degrees shall be  
5 considered to be a wall corner. The wall corner shall provide a positive  
6 connection between the sections of the wall on each side of the corner such  
7 that the wall backfill material cannot spill out through the corner at any time  
8 during the design life of the wall. The Contractor shall construct the wall  
9 corner such that the wall sections on both sides of the corner attain the full  
10 geosynthetic layer embedment lengths shown in the Plans.

11  
12 Where required by retaining wall profile grade, the Contractor shall terminate  
13 top layers of retaining wall geosynthetic and backfill in accordance with the  
14 method submitted by the Contractor and approved by the Engineer. The end  
15 of each layer at the top of the wall shall be constructed in a manner which  
16 prevents wall backfill material from spilling out the face of the wall throughout  
17 the life of the wall. If the profile of the top of the wall changes at a rate of 1:1  
18 or steeper, this change in top of wall profile shall be considered to be a  
19 corner.

20  
21 **Tolerances**  
22 The Contractor shall complete the base of the retaining wall excavation to  
23 within plus or minus 3 inches. of the staked elevations unless otherwise  
24 directed by the Engineer. The Contractor shall place the external wall  
25 dimensions to within plus or minus 2 inches. of that staked on the ground.  
26 The Contractor shall space the reinforcement layers vertically and place the  
27 overlaps to within plus or minus 1 inch of that shown in the Plans.

28  
29 The completed wall(s) shall meet the following tolerances:

30		<u>Permanent Wall</u>	<u>Temporary Wall</u>
31			
32			
33	Deviation from the design	3 inches	5 inches
34	batter and horizontal alignment		
35	for the face when measured		
36	along a 10-foot straight edge at		
37	the midpoint of each wall layer		
38	shall not exceed:		
39			
40	Deviation from the overall	2 inches	3 inches
41	design batter per 10 feet of wall		
42	height shall not exceed:		
43			
44	Maximum outward bulge of	4 inches	6 inches
45	the face between backfill		
46	reinforcement layers shall		
47	not exceed:		